

REMARKS/ARGUMENTS

The present Amendment is in response to the Office Action having a mailing date of October 26, 2004. Claims 1-23 are pending in the present Application. Claim 12 has been withdrawn from consideration. Applicant has amended claims 1, 3, 5, 8, 10, 13, 14, 15, 16, 17, 19, 20, 22, and 23. Applicant has also added claims 24-25. Consequently, claims 1-11 and 13-25 remain pending in the present Application.

Applicant has amended claims 3, 5, 8, 10, 15, 17, 20, and 22 to be in independent form, incorporating the limitations of the base claim and any intervening claims. Applicant has also amended claims 13, 14-17, 19, 20, 22, and 23 to remove alphanumeric designations for steps. Applicant respectfully submits that these amendments do not narrow the scope of claims 3, 5, 8, 10, 13, 14-17, 19, 20, 22, and 23. Applicant has also amended claims 1 and 13 to recite that the core portion of the at least one magnetic write line includes a magnetic material. Support for the amendment can be found in the specification, page 11, lines 3-5; page 13, line 22-page 14, line 1; and Figures 2-7. New claims 24 and 25 recite that the magnetic elements include a nonmagnetic layer and a magnetic layer adjacent to the at least one magnetic write line. Support for new claims 24 and 25 can be found on page 27, lines 9-11 and Figure 9. Consequently, Applicant respectfully submits that no new matter is added.

In the above-identified Office Action, the Examiner indicated that claims 3-5, 8, 10, 11, 15-17, 20, 22, and 23 contain allowable subject matter. Applicant gratefully appreciates the Examiner's indication that claims 3-5, 8, 10, 11, 15-17, 20, 22, and 23 contain allowable subject matter.

Applicant has amended claims 3, 5, 8, 10, 15, 17, 20, and 22 to be in independent form, incorporating the limitations of the base claim and any intervening claims. Claims 4, 11, 16, and 22

depend upon independent claims 3, 10, 15, and 20, respectively. Accordingly, Applicant respectfully submits that claims 3-5, 8, 10, 11, 15-17, 20, 22, and 23 are allowable as presented.

In the above-identified Office Action, the Examiner rejected claims 1 and 13 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,351,409 (Rizzo) and U.S. Patent No. 6,269,018 (Monsma). The Examiner also rejected claims 1, 2, 6, 7, 9, 13, 14, 18, 19, and 21 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,740,947 (Bhattacharyya).

In the above-identified Office Action, the Examiner rejected claims 1 and 13 under 35 U.S.C. § 103 as being unpatentable over Rizzo and Monsma. In so doing, the Examiner cited Fig. 1 of Rizzo and Fig. 5 of Monsma.

Applicant respectfully traverses the Examiner's rejection. Claim 1 recites a magnetic memory including a plurality of magnetic memory cells and at least one magnetic write line. The magnetic write line is magnetostatically coupled with at least the data storage layer of the magnetic element for each cell such that flux closure is substantially achieved. Claim 1 further recites that the magnetic write line has a core portion including a magnetic material. Claim 13 recites an analogous method claim.

In contrast, Rizzo and Monsma fail to teach or suggest a magnetic memory utilizing a magnetic write line that has a core portion including a magnetic memory and that is magnetostatically coupled with the data storage layer such that flux closure is substantially achieved. Rizzo fails to teach or suggest the use of the recited magnetic write line having the recited coupling. The cited portion of Rizzo, Fig. 1, does not teach or suggest the use of a magnetic write line. Applicant can find no indication that either of the write line 20 or 21 includes any magnetic material. Consequently, Applicant respectfully submits that the lines 20 and 21 Rizzo are merely conductive write lines. Fig. 13 of Rizzo does include a line having magnetic cladding 62.

Rizzo, Fig. 13 and col. 6, lines 11-19. However, the magnetic material is at the outer surfaces of the write line. There is nothing that indicates that the core portion 60 is a magnetic material. Moreover, Applicant can find no mention in Rizzo that the line 20, 21, or 60 is magnetostatically coupled with any portion of the magnetic cell such that flux closure is substantially achieved. Consequently, Rizzo fails to teach or suggest the use of a magnetic write line having a core portion including a magnetic material and which is magnetostatically coupled with the data storage layer such that flux closure is substantially achieved.

Monsma also fails to teach or suggest the use of the recited magnetic write line having the recited coupling. Applicant can find no mention in Monsma of magnetic write lines, particularly write lines having a core portion including a magnetic material. Instead, Monsma merely states that a bit line 42 and word line 44 are used. Moreover, Monsma teaches that the current from the write lines 42 and 44 flows through the magnetic cell. Monsma specifically states that flux closure may be achieved because the current flows through the cell and the switching field is generated by current flowing *within the magnetic cell*, rather than current within the lines. Monsma, col. 6, line 66-col. 7, line 3. Thus, to the extent that Monsma teaches that flux closure is achieved by field generated within the cell, Monsma teaches away from the recited magnetic write line that is magnetostatically coupled with the data storage layer such that flux closure is substantially achieved. Accordingly, Applicant respectfully submits that Monsma fails to teach or suggest the use of a magnetic write line having a core portion including a magnetic material and which is magnetostatically coupled with the data storage layer such that flux closure is substantially achieved.

Furthermore, any combination of Rizzo and Monsma fail to teach or suggest the memory and method recited in claims 1 and 13, respectively. As discussed above, both Rizzo and Monsma

fail to teach or suggest the use of a magnetic write line having a core portion including a magnetic material and which is magnetostatically coupled with the data storage layer such that flux closure is substantially achieved. Consequently, any combination of Rizzo and Monsma would necessarily fail to teach or suggest this feature. Stated differently, if the teachings of Rizzo and Monsma were combined, the combination might use write lines having magnetic cladding on multiple sides of the write lines as in Rizzo and might drive current through the magnetic cell in order to achieve flux closure as described by Monsma. However, the combination would still fail to use a magnetic write line having a core portion including a magnetic material. Further, the magnetic write line would not be magnetostatically coupled with the data storage layer such that flux closure is substantially achieved. Instead, flux closure would be achieved by driving the current through the cell and generating a switching field within the cell as in Monsma. Consequently, Rizzo and Monsma, separately or in combination, fail to teach or suggest the memory and method recited in claims 1 and 11, respectively. Accordingly, Applicant respectfully submits that the claims are allowable over Rizzo in view of Monsma.

The Examiner also rejected claims 1, 2, 6, 7, 9, 13, 14, 18, 19, and 21 under 35 U.S.C. § 103 as being unpatentable over Bhattacharyya. In so doing, the Examiner cited Fig. 18 of Bhattacharyya.

Applicant respectfully disagrees with the Examiner's rejection of claims 9 and 21. Claims 9 and 21 depend upon claims 8 and 20, respectively. The Examiner previously indicated that claims 8 and 20 are allowable. Further, Applicant has amended claims 8 and 20 to be in independent form, incorporating the limitations of the base claim and any intervening claim. Claims 9 and 21 thus depend upon allowable base claims. Accordingly, Applicant respectfully submits that claims 9 and 21 are allowable as presented.

Applicant respectfully traverses the Examiner's rejection of claims 1, 2, 6, 7, 13, 14, 18, and 19. As discussed above, claims 1 and 13 recite the use of a magnetic write line having a core portion including a magnetic material and which is magnetostatically coupled with the data storage layer such that flux closure is substantially achieved. Bhattacharyya fails to teach or suggest the recited magnetic write line. Bhattacharyya does describe a system in which particular write lines are used to achieve flux closure. However, in order to do so, Bhattacharyya utilizes conductive lines having magnetic cladding on three sides. Bhattacharyya, col. 3, lines 15-17; col. 11, lines 29-51; and Fig. 18 (items 11 and 13 and items 15 and 17). Thus, even if it is assumed that the system of Bhattacharyya may achieve flux closure, the magnetic write lines which do so have magnetic material at the outer surfaces. Applicant has found no indication in Bhattacharyya that the core portion (e.g. items 11 and 15 in Fig. 18 of Bhattacharyya) of the lines includes a magnetic material. Thus, Bhattacharyya fails to teach or suggest the recited magnetic write line having a core portion that includes a magnetic material. Accordingly, Applicant respectfully submits that claims 1 and 13 are allowable over the cited references.

Claims 2, 6, and 7 depend upon independent claim 1. Claims 14, 18, and 19 depend upon independent claim 13. Consequently, the arguments herein apply with full force to claims 2, 6, 7, 14, 18, and 19. Accordingly, Applicant respectfully submits that claims 2, 6, 7, 14, 18, and 19 are allowable over the cited references.

New claim 24 recites a memory including a plurality of magnetic memory cells and at least one magnetic write line. Each magnetic cell includes a magnetic element having a data storage layer, a magnetic layer, and at a nonmagnetic layer separating the data storage layer from the magnetic layer. The magnetic layer is adjacent to the magnetic write line. Claim 25 recites an analogous method claim.

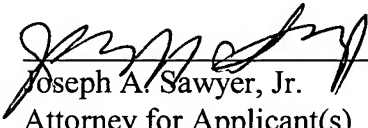
Applicant has found no mention in the cited portions of Rizzo, Monsma, or Bhattacharyya of including recited magnetic and nonmagnetic layers in the memory element as well as placing the magnetic layer adjacent to the magnetic write line. Consequently, Rizzo, Monsma, and Bhattacharyya, separately or in combination, fail to teach or suggest the memory and method recited in claims 24 and 25. Accordingly, Applicant respectfully submits that claims 24-25 are allowable over the cited references.

Applicant's attorney believes that this application is in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicant's attorney at the telephone number indicated below.

Respectfully submitted,

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Date



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